

Indian Health Service

FY 1999 Energy Report

November 26, 1999

**Indian Health Service
FY 1999 Energy Report**

Table of Contents

	Page
INTRODUCTION.....	3
A. ANNUAL ENERGY MANAGEMENT DATA REPORT.....	4
I. Energy Consumption and Cost Data	4
II. Energy Conservation Program Summary	5
B. ENERGY CONSUMPTION REDUCTION GOALS	7
C. ENERGY SAVINGS PERFORMANCE CONTRACTS.....	8
D. ENERGY EFFICIENCY AND WATER CONSERVATION PROJECT FUNDING.....	9
E. ENERGY AND WATER SURVEYS AND AUDITS	14
I. Prioritization Survey	14
II. Comprehensive Facility Audit	15
III. Leased Facilities	22
F. IMPLEMENTATION OF ENERGY EFFICIENCY AND WATER.....	22
G. SOLAR AND OTHER RENEWABLE ENERGY	23
H. MINIMIZATION OF PETROLEUM-BASED FUEL USE	23
I. ENERGY EFFICIENT OPERATIONS AND MAINTENANCE PROCEDURES	23
J. ENERGY EFFICIENCY IN NEW SPACE	24
K. PERFORMANCE EVALUATIONS	25
L. INCENTIVE AWARDS	25
M. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS	26
N. ENERGY MANAGEMENT TRAINING.....	26
O. ENVIRONMENTAL BENEFITS OF ENERGY MANAGEMENT ACTIVITIES	27

INTRODUCTION

The Indian Health Service annual energy consumption goals are consistent with the Energy Policy Act (EPA) of 1992 and Executive Order (EO) 12902 which were established for the all Area offices for Fiscal Year (FY) 1985 through FY 2005. Fiscal Year 1985 was established as the base year for the purpose of calculating the following reductions in energy consumption per gross square foot:

- 10% by FY 1995 (EPA of 1992)
- 30% by FY 2005 (Executive Order 12902 - 3/08/94)

Executive Order 13123, June 3, 1999, entitled "Greening the Government Through Efficient Energy Management" revokes Executive Orders 12902, 12845, and 12759 and requires Federal agencies to achieve by 2010:

- 35% greater energy efficiency in buildings relative to 1985 levels
- 30% cut in greenhouse gas emissions from building related use relative to 1990

Executive Order 13123 also provides that "agencies shall ensure that all, appropriate personnel receive training for implementing the order."

The Indian Health Service (IHS) physical plant consists of 46 Hospitals, 54 Health Centers, 45 Health Stations, and 1,314 Housing Bldgs. The table below summarizes the type, count, square footage of Government-owned buildings:

bldg_desc	GSF	No of Bldgs	Perc of GSF
Hospital Buildings	3,572,163	46	39.07
Health Center Buildings	737,431	54	8.07
Health Station Buildings	110,651	45	1.21
Other Institutional (Excluding Health Centers and	471,425	126	5.16
Office Buildings	561,202	186	6.14
Other Buildings	905,160	434	9.90
Quarters	2,784,398	1,314	30.46

A. ANNUAL ENERGY MANAGEMENT DATA REPORT**I. Energy Consumption and Cost Data**

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1999
PREPARED BY:	Adam Scully, P.E.	TITLE:	Sr. Asst. Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 26, 1998

Buildings/Facilities

Energy Type	Reporting Units	Annual Consumption	Annual Costs 1000's	Unit Cost (\$)	Total MMBtu
Electricity	KWH	128,863,673.	\$ 9,083.0	\$0.070 per kwh	439,682.9
Fuel Oil	Thous. Gal.	1,367.2	\$ 1,281.0	\$0.937 per gal	189,631.9
Natural Gas	Thous.Cu.Ft.	552,244	\$ 1,474.3	\$2.670 per 1000 CuFt	569,349.1
LPG/Propane	Thous. Gal.	1,237.2	\$ 789.8	\$0.642 per gal	117,038.5
TOTALS	---	---	\$ 12,628	---	1,315,684.2

Gross Square Feet	Btu/Gross Square Feet	\$/Gross Square Feet
6,509,570.0	202,115	1.95

II. Energy Conservation Program Summary

AGENCY:	Indian Health Service	REPORTED YEAR:	Fiscal Year 1999
PREPARED BY:	Adam Scully, P.E.	TITLE:	Staff Engineer
PHONE NUMBER:	(301) 443-7998	DATE SUBMITTED:	November 26, 1999

DIRECT AGENCY EXPENDITURES - 1999

Direct expenditures on facility energy efficiency improvements

Annual Expenditures (Thous. \$) Current Fiscal Year

3,994

Annual savings anticipated from expenditures 1,754 MMBTU

30,000(Thous. \$)

ENERGY SAVINGS PERFORMANCE CONTRACTS -1999

Number of ESP contracts awarded

None

Annual savings anticipated from ESP contracts

None

UTILITY INCENTIVES - 1999

Incentives received

None (Thous. \$)

Funds spent in order to receive incentives

None (Thous. \$)

Annual savings anticipated from DSM activities

None MMBTU

TRAINING - 1999

Current year expenditures for energy management training

24.3(Thous. \$)

Number of personnel trained

26

SUMMARY OF ALTERNATIVE TRANSPORTATION FUEL USAGE - 1999

Vehicles (required by EPACT Sec. 308)

Number of dedicated alternative fuel vehicles

None

Fuel consumed in dedicated AFVs

0 (Thous. GEG)

Number of dual-fuel alternative fuel vehicles

None

Fuel consumed in dual-fuel AFVs

0 (Thous. GEG)

Fuel (required by EPACT Sec. 303)

Biodiesel Thous. Gal.

None

Electric KWH

None

Ethanol Thous. GEG

None

Hydrogen Thous. GEG

None

Liquified Thous. GEG

None

Petroleum Gas (LPG)

Methanol Thous. GEG

None

Natural Gas (CNG or LNG) Thous. GEG

None

Other Thous. GEG

None

Annual Consumption Cost (Thous. \$)

DIRECT AGENCY EXPENDITURES – 2000 Projected

Direct expenditures on facility energy efficiency improvements

Annual Expenditures (Thous. \$) Current Fiscal Year

\$2,158

Annual savings anticipated from expenditures

1,500 MMBTU

25 (Thous. \$)

ENERGY SAVINGS PERFORMANCE CONTRACTS – 2000 Projected

Number of ESP contracts awarded

1

Contractor Share

Gov't Share

Estimated Life Cycle Savings (Thous. \$)	<u>20</u>		
Annual Savings anticipated from ESP contracts		<u>0</u> MMBTU	<u>9</u> Thous. \$
Total annual payments made to all ESP Contractors (Thous. \$) (for energy surveys, paid upfront)			<u>150</u> Thous. \$

UTILITY INCENTIVES – 2000 Projected

Incentives received	<u>None</u> (Thous. \$)
Funds spent in order to receive incentives	<u>None</u> (Thous. \$)
Annual savings anticipated from DSM activities	<u>None</u> MMBTU

TRAINING – 2000 Projected

Current year expenditures for energy management training	<u>30</u> (Thous. \$)
Number of personnel trained	<u>30</u>

DIRECT AGENCY EXPENDITURES – 2001 Projected

Direct expenditures on facility energy efficiency improvements		<u>\$2,200</u>
Annual Expenditures (Thous. \$) Current Fiscal Year		<u>25</u> (Thous. \$)
Annual savings anticipated from expenditures	<u>1,500</u> MMBTU	

ENERGY SAVINGS PERFORMANCE CONTRACTS – 2001 Projected

Number of ESP contracts awarded	<u>1</u>	
	Contractor Share	Gov't Share
Estimated Life Cycle Savings (Thous. \$)	<u>20</u>	<u>9</u>
Annual Savings anticipated from ESP contracts	<u>1,865</u> MMBTU	<u>29</u> Thous. \$
Total annual payments made to all ESP Contractors		<u>20</u> Thous. \$

UTILITY INCENTIVES – 2001 Projected

Incentives received	<u>None</u> (Thous. \$)
Funds spent in order to receive incentives	<u>None</u> (Thous. \$)
Annual savings anticipated from DSM activities	<u>None</u> MMBTU

TRAINING – 2001 Projected

Current year expenditures for energy management training	<u>30</u> (Thous. \$)
Number of personnel trained	<u>30</u>

B. ENERGY CONSUMPTION REDUCTION GOALS

The IHS annual energy consumption goals are consistent with the Energy Policy Act of 1992 and Executive Order 12902. Our goals are to reduce energy consumption 20 percent by year 2000, and 30 percent by year 2005. These reduction goals are based on 1985 energy consumption data.

In Fiscal Years 1985, 1998, and 1999 the Indian Health Service (IHS) reported the following:

Fiscal Year	MMBtu	GSF	Btu\GSF	Percent Increase
1985	1,414,011	7,598,324	186,095	
1998	1,186,115	6,869,652	172,660	- 7.2
1999	1,316,827	6,509,570	202,300	+8.7

Between the years of 1992 and 1998 IHS has reported a steady decrease in their energy consumption rate. However, this year the IHS is reporting an increased 8.7 percent since 1985 and 17.2 percent since FY 1998.

The sudden increase is attributed to changes in the method in which the Alaska Area reports their data. In prior years the Alaska Area collected data for the current Fiscal Year and on September they submitted partial data which would normally include only the first 2 fiscal quarters. This year, they submitted data for the first 2 fiscal quarters of this year and last 2 fiscal quarters of the previous year. This doubled the amount they have reported the past 7 years. A history of the Alaska energy consumption is as follows:

FY	KWH	Oil	NG	GSF	MMBtu
99	27,582,249	718	284,608	1,323,376	712,922
98	14,061,200	674	94,206	1,242,002	353,720
97	16,920,332	673	36,609	1,210,230	
96	16,920,332	673	36,609	1,210,230	
95	15,587,908	499	50,827	1,195,190	
94	16,039,393	652	51,793	1,278,595	
93	15,540,433	668	54,074	1,334,044	
92	14,498,075	651	67,503	968,830	
85	10,750,243	1762	64,489	1,421,328	435,580

The IHS has no records of energy consumption data between the years 1986 and 1991. But we are concerned that the actual GSF reported in 1985 is high. The 1985 GSF value appears to have included housing units. Historically, IHS has never reported consumption for housing units. The tenants pay their utility bill directly to the utility companies which makes it very difficult for the Area Offices to collect this data for reporting. We would like to change the value of the 1985 GSF from 7,598,324 to 6,000,000.

A more accurate representative of historic energy consumption for IHS would include estimated corrections to the 1985 Gross Square Feet (GSF) as well as estimated corrections to the 1992 to 1998 Energy Consumption (MMBtu). These corrections are reflected below:

Fiscal Year	MMBtu	GSF	Btu\GSF	Percent Increase
1985	1,414,011	6,000,000	235,668	
1998	1,400,000	6,869,652	203,800	- 13.52
1999	1,316,827	6,509,570	202,300	- 14.15

ALBUQUERQUE - In 1985, Albuquerque Area IHS reported a total consumption of 113,652 MMBtu at a rate of 214,715 Btu/GSF. In 1999, energy consumed totaled 114,370 MMBtu (211,803 Btu/GSF), representing nearly a 2% reduction since 1985. This is a significant increase in

comparison to previous years. However, it is anticipated that this trend is temporary and may have resulted from a malfunctioning solar energy system at the Santa Fe Hospital and the use of a temporary electrical system at the Albuquerque Hospital. In 1998, the Albuquerque Area's energy consumption was at a rate of approximately 190,000 Btu's per gross square foot, which is approximately 10% less than the rate of 1985. Assuming that the 1998 data is accurate, the largest increases in energy consumed in 1999, is the amount of natural gas used at the Santa Fe Hospital, and the electrical energy used at the Albuquerque Hospital. In both cases, approximately twice the amount of energy was consumed between 1999 and 1998. The increased energy consumption at Santa Fe may have resulted from the break down of the solar heating system. If the solar heating system has malfunctioned, it would be necessary to use the natural gas fired boiler to heat the hospital. Further investigation is necessary to confirm the exact cause of the increase energy consumption at Santa Fe. The increase in electrical energy consumption at the Albuquerque Hospital is a result of the use of an electric chiller and boiler, while the replacement of its HVAC system is in progress.

PORTLAND - Portland Area's goal to reduce energy consumption by one percent each year was accomplished for FY 1986 through FY 1995. A reduction in energy consumption of two percent per year is the goal for FY 1996 through 2005. For FY 1999, a eighteen - percent decrease in energy consumption from the FY 1985 level is the target. This goal, 77,469 BTUs per square foot per year, was not achieved for FY 1999, which had an actual usage of 86,539 BTUs per square foot per year. As explained in FY 1997, The new Youth Treatment Center (YTC) in Spokane is a large 24-hour, round the clock, operational facility, employing the latest design criteria for HVAC. YTC consumes much more energy than any other Area Service Unit because of 24-hour operation. The Area's energy consumption goals can not be met with the addition of this 24-hour facility. If YTC is excluded from the analysis, the Area achieved the goal of a eighteen- percent decrease in energy consumption with 74,302 BTU per square foot per year for FY 1999. Total energy consumption was reduced by approximately 4.4 percent over FY 1997 levels. The Area's future goal is to continue implement Energy Conservation Measures and attempt to reduce energy consumption by two percent each year for years FY 1998 through FY 2005 and reduce consumption by one percent each year FY 2006 through FY2010 in accordance with applicable presidential executive orders. The Portland Area, as mandated by EO 12902, has established prioritization of surveys for all facilities, and Annual comprehensive audits at ten percent of all facilities owned or leased. After the completion of energy audits funded in FY 1998, comprehensive audits will have been completed at all Portland Area facilities in accordance with Executive Order #12902. Actions to implement economical audit recommendations within 180 days of audit completion.

C. ENERGY SAVINGS PERFORMANCE CONTRACTS

ABERDEEN - The Aberdeen Area IHS has signed a Memorandum of Understanding (MOU) with the Department of Energy (DOE) which will allow IHS to enter into an Energy Savings Performance Contract (ESPC) with qualified preselected companies.

ES-S has issued a Task Order to Johnson Controls Inc. to perform detailed energy surveys to verify energy saving opportunities in lighting systems and mechanical systems prior to awarding an ESPC. The ESPC is anticipated to be awarded in February 2000.

ALBUQUERQUE – Currently, non-recurring Maintenance and Improvement (M&I) funds are used to fund energy conservation projects. The project at the Albuquerque Indian Hospital, which has been undergoing extensive renovation during the past 4 years, is an example. Along with other activities, this project will replace the large central boilers and chiller with a thermal ground source heat pump loop system, with constant-temperature water being pumped out of the ground and circulated through the heat pumps. This project will replace the antiquated boiler system with an updated system, which should be considerably more energy efficient. Other projects such as replacing lighting with more efficient T-8 lamps and electronic ballasts are also funded out of M&I funds.

OKLAHOMA – A form of an ESPC, without the guaranteed energy savings, is being implemented for the Creek Nation via a Performance Agreement for Comfort from Trane (PACT). Lighting upgrades, 2 new air cooled chillers, 3 new air handling units, a reduction in kitchen outside air quantity, and a new DDC system will be accomplished with this project.

Super ESPC through the Department of Energy (DOE) for the Oklahoma City Area I.H.S. is in abeyance pending a legal opinion on the restrictions of our agency entering into a long term financial obligation or transferring such an obligation to a tribe.

PORTLAND - No energy savings performance contracts (ESPCs) have been determined to be justifiable for the Portland Area. There is no information to report for FY 1998.

D. ENERGY EFFICIENCY AND WATER CONSERVATION PROJECT FUNDING

Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects. For FY 1999 the IHS Headquarters has recommended the following target levels for Energy Surveys and Energy Projects:

Area Office	Energy Surveys and Projects (minimum level)
Aberdeen	115,000
Anchorage	299,000
Albuquerque	66,000
Bemidji	82,000
Billings	75,000
California	59,000
Navajo	153,000
Nashville	51,000
Oklahoma	121,000
Phoenix	113,000
Portland	77,000
Tucson	23,000
Total:	\$1,234,000

ABERDEEN - Planning to study water conservation opportunities during fiscal year 2000.

ALBUQUERQUE - Currently, non-recurring Maintenance and Improvement (M&I) funds are used to fund energy conservation projects. The project at the Albuquerque Indian Hospital, which has been undergoing extensive renovation during the past 4 years, is an example. Along with other activities, this project will replace the large central boilers and chiller with a thermal ground source heat pump loop system, with constant-temperature water being pumped out of the ground and circulated through the heat pumps. This project will replace the antiquated boiler system with an updated system, which should be considerably more energy efficient. Other projects such as replacing lighting with more efficient T-8 lamps and electronic ballasts are also funded out of M&I

funds.

ANCHORAGE - The Alaska Area is served by seven regional hospitals in the communities of Anchorage, Barrow, Bethel, Dillingham, Kotzebue, Nome, and Sitka, and many clinics and health care facilities throughout Alaska. This Energy report consists of updated historical data for energy consumption at each hospital for FY 98 and FY 99, and a description of projects that address more energy efficient operations, or projects, which address energy conservation as a component of a project. Consistent with the requirements of Energy Policy Act of 1992 and Executive Order 12902 the following projects have been accomplished, initiated, or planned in order to meet the objectives of the plan to reduce energy consumption in federal facilities. Currently more than 10% of the funding for projects passed on to the health care facilities address increased energy efficient aspects. IHS funded Health Care facilities in Alaska have focused on reducing energy consumption on a per SF basis, and will continue, in order to meet the federal energy objectives by the Year 2005.

Samuel Simmons Memorial Hospital, SSMH (Barrow): SSMH plans to replace older T-12 lighting tubes and magnetic ballast's as they fail with T-8 tube technology and electronic ballast's to improve energy efficiency. This is expected to save energy in the remodel spaces and expansion projects. This work is anticipated to be on going for the next few years as various aspects of the Master Plan are completed. Projected projects to improve energy are the planned boiler replacement and exterior siding and insulation project, both of these projects have completed designs and are awaiting construction funding. Further, a recently approved project for remodel of approximately one third of the hospital interior will address more efficient HVAC and replace older lighting with T8 lighting as well as accomplishing life safety and other deficiencies.

Kotzebue Hospital, Maniilaq Health Corporation, MHC (Kotzebue): The hospital maintenance staff is finishing the replacement of the fluorescent T-12 lamps with T-8 and electronic ballast's which has resulted in an energy savings to the facility. This project will be completed by December 1999. MHC is currently conducting an energy audit of the hospital. The audit will precipitate several projects focused on energy savings. Preliminary results revealed some significant findings, like malfunctioning air supply damper to the emergency generator room. This was allowing the outside, untempered air to infiltrate unchecked into the generator room year round, a significant energy waste. The draft report is due to the MHC the second week in September, 1999, and the final report and action items will be prioritized by life cycle cost/benefit analysis. The final report is scheduled to be complete by December of 1999. Energy Saving projects are expected to follow in FY 00 as a result of the Energy Audit findings.

Norton Sound Regional Hospital, NSRH (Nome): Several projects are currently on-going that will significantly affect energy efficiencies at the Nome Hospital. Three (3) older low-pressure steam boilers were replaced with two energy efficient hydronic boilers utilizing VFD pumping systems, are now complete.

Replacement of the original high pressure steam generator with a new energy efficient steam generator sized for the current facility needs is now complete. This was constructed in the third quarter of 1998.

Replacement of the out of date medical waste incinerator with a new state of the art continuous burn batch process is also complete at this time.

Replacement of the existing domestic hot water heaters are scheduled for completion in November of 1999. The addition of two new 16 GPM 40-160 deg F water heaters and three 168 gallon insulated water storage tanks are currently being constructed at the hospital. The steam boiler generates 900 LBS/HR of 10 PSI saturated steam for an energy efficient source of heat for the hot water heating system.

Yukon Kuskokwim Regional Hospital Corporation, YKRHC (Bethel): Main Entrance Up-Grade - The expansion and up-grade of the existing front entryway to the hospital included installation of energy efficient glazing and air curtains to divert heat from exiting the building when person's enter or exit the facility. These additions have reduced the loss of heat in the patient waiting area just inside the main entryway; thus improving energy efficiency and patient comfort at the same time.

Lighting retrofit project – YKRHC plans to replace fluorescent lighting with the more efficient compact fluorescent lamps and T-8 light tube technology with electronic ballast's this winter. The project is expected to save approximately 30KW and approximately 100,000 kWh's per year. The retrofit work is scheduled for completion by May 2000.

Replacement of the Vacuum and medical air compressor systems will be changed out in FY 00. The system will change from a duplex unit to triplex for closer sizing of the supply capability to the load demand. This will save running motors at limited capacity and thus save energy.

Kanakanak Hospital, Bristol Bay Area Health Corp., BBAHC (Dillingham): Lighting retrofit project – BBAHC has just received funding for a design/build project to replace fluorescent lighting in the hospital and administration buildings with the more efficient compact fluorescent lamps and T-8 light tube technology with electronic ballast's. This is expected to save approximately 30KW to 40KW and approximately 100,000 kWh's per year. In addition the existing windows in the 301 Administration Building are to be replaced in FY 00; the existing 1970 vintage window systems are inappropriate for the sub-arctic climate in Dillingham. The window infiltration of outside air is excessive due to a poor installation and/or seal degradation and a significant quantity of energy savings will be captured in this retrofit.

The recent addition of the HVAC system to the 301 Administration building, while increasing the energy requirements, have incorporated the state of the art technologies and energy reduction strategies to minimize the energy requirements. This project was completed in 1998. The system is a VAV control strategy with CO2 monitoring for air quality and make-up air modulation for maximum energy efficiency, while maintaining a healthy building.

The In-patient window replacement project is now in construction and will eliminate the infiltration of outside air and moisture and improve the R value from about 2 to 5, thereby saving energy in this area of the hospital. Additional benefits are improved patient and staff comfort, and less maintenance calls to this area. The project is anticipated to be finished by October of 1999.

A Direct Digital Control System (DDC) is being added to the Hospital Complex to more efficiently monitor and control major building equipment. The system is 95% constructed as of this writing. Improvements to energy efficiency in the hospital are predicted for operating the HVAC, chiller, heat recovery, domestic hot water, and electrical systems. The primary buildings expected to see significant energy efficiency results are the 401 Hospital, Jake's Place Detox center, and the 301 Administration buildings. The project is expected to be complete by the end of October of 1999.

Alaska Native Medical Center, ANMC (Anchorage): ANMC is a new medical center with the state of the art Direct Digital control, energy monitoring and management systems. The operators are not completely familiar with the full capabilities of these Facility Management System's (FMS) and is anticipated that through on-hands experience and training. The staff is scheduled for additional training this Fall to learn to optimize the building systems like HVAC, heat recovery, cooling and snow melt systems utilizing the FMS in harmony with the

building needs and energy signature.

The design investigations into a ground water source cooling system to supplement the building chiller cooling capability has been complete. This project proposes to use groundwater from a drilled well adjacent to the Energy Plant at ANMC through a heat exchanger to provide chilled water, in lieu of utilizing the three existing 335 cooling ton each York Rotary Screw Chillers. Chiller usage amounts to approximately 1,064,400 kWh per year of energy usage. The preliminary cost estimate for provision and proposed use of 38 degree F. groundwater (through a heat exchanger to generate 44 degree chilled water for cooling) is approximately \$ 356,000 with a simple payback in 7 years, and the resultant cost (energy) savings of over \$50,000 per year after Year-7 and on into the future. This project design is now funded with construction anticipated for the spring/summer of 2000.

ANMC is implementing energy saving measures on the lighting and HVAC system. Many spaces in the hospital are occupied 8-10 hours per day, such as the Dental Space, and the lighting circuits can be controlled by a DDC timer and motion sensor to allow for a night set back condition. The VAV boxes may also be controlled to reduce the air to the spaces when un-occupied; both air and lighting can be restored upon unscheduled occupancy or maintenance activity via the occupancy sensors, or digital timer override switches replacement for the traditional wall mounted toggle switch. The DDC system will also be utilized to control space lighting and air delivery based on the space function/occupancy requirements.

Southeast Area Regional Hospital Corporation, SEARHC (Sitka): This hospital building was built in 1948 as a concrete structure and converted to a hospital in 1954 with out any ventilation. This six-story building is currently undergoing re-model to enhance the air quality by adding external ventilation in phases by floor. The HVAC equipment being installed is energy efficient as practical, but the bottom line is that additional air supply to the building requires additional heat/energy; and therefore the building is going to increase in energy per square footage as HVAC projects are completed. As areas are re-modeled the new energy saving T-8 lighting fixtures are used to replace older technologies. This facility is currently 140-144,000 BTU/SF/YR making it the most energy efficient hospital in the IHS Alaska Area, but an increase in energy over the previous four quarters by about 20 percent was due to the recent HVAC project additions.

Alaska Area Health Clinics: Currently there are various small projects to address energy are on going with the Health Clinics in Alaska. The Tanana Chiefs Conference Inc. (TCC) has a lighting retrofit project and fan replacement with variable speed drives to address more energy efficiencies. The Health Clinic in Metlakatla replaced the old electrical heating system with a new energy efficient Heat Pump system; two 3.5 ton heat exchangers were added and the units have a COP of approximately 4.0. We estimate the facility to reduce their electrical energy by one half of the prior annual electrical consumption. The addition of ventilation to the building , which will cure sick building syndrome, will consume more energy. The expectation is to still obtain a residual energy savings to the facility because of the application of this newer energy efficient technology. The project is scheduled for completion by October 1999.

The Energy Data is presented in the following attached reports for each of the seven hospital locations in Alaska. The net result of annual energy consumption in the short term, three years, is an increase in the per SF energy consumption. The trend is due to Alaskan Hospitals being in their infancy with regard to energy efficiency retrofits and upgrades, and the increase in projects to provide proper ventilation/cooling to address unsuitable or inadequate air quality in the Hospitals. The Kotzebue Hospital managed by the Manilaq Health Corporation has been a significant contributor to pioneering the energy awareness and energy efficiency retrofits in Alaska. They have made it a top priority to reduce energy

and have demonstrated their willingness and ability to reduce the rate of energy consumption over the last several years; their last four reported quarters of the total energy picture has held the line on energy on a Btu per SF basis compared to the previous four quarters. With their focus on energy and the completion of the Energy Audit they will be continuing on with energy reduction strategies. Other Hospital locations intend to follow suit and are placing more emphasis on energy efficient projects.

BILLINGS - The Facilities Management Branch utilizes Maintenance and Improvement (M&I), Quarters, and Medicare/Medicaid (M&M) funds to construct, repair, and retrofit the medical facilities and quarters in Montana and Wyoming with energy efficient systems. Energy efficient lighting systems, building insulation materials, HVAC energy management control systems, and fuel source conversions (i.e., electrical to propane) have all been designed into various projects this year.

NASHVILLE - The Area has not had any projects specifically for energy but has included energy conservation enhancement in the projects which have been performed. The most recent example of such projects consist of the new roof on the Cherokee Hospital which replaced the existing roof and insulation with double the thickness of the insulation layer. All eight air handlers (and a portion of the VAV boxes) on the roof was also replaced with more efficient units. These projects were completed prior to FY 98. The only other energy or energy enhancing projects in the near future will be the replacement of the current lighting system with energy efficient lighting and replacement of the remaining VAV boxes and a balancing of the system—all in the Cherokee Hospital.

PHOENIX – PHOENIX INDIAN MEDICAL CENTER - JUNE, 1998 The existing air cooled refrigeration unit was replaced with a high efficiency screw the liquid cooled chiller and water cooling tower. This unit is capable of meeting the peak cooling demand of the entire entire building which eliminated the use of less efficient air cooled units. Cost: \$75,000

PHOENIX INDIAN MEDICAL CENTER - October, 1999 Two existing 600 hp firetube steam boilers were replaced with two 300 hp watertube type boilers. Overall efficiency of the smaller watertube boilers is significantly higher than the existing units. Cost: \$280,000

SAN CARLOS - Programmed to install a Flat Plate Heat Exchanger. This will allow the cooling system at certain condition to use chill water directly from the cooling tower. The chiller can be shut down. Energy reduction will be significant. Cost: \$91,000

PORTLAND - Non-recurring Maintenance and Improvement funds are used to accomplish energy conservation projects within the Portland Area.

TUCSON - Funding for energy/utilities management and conservation comes from M&I operations and project funds, and from the Energy surveys and projects fund. The amounts of FY99 funds in each account:

M&I Operations	\$382,000
M&I Projects	\$263,000
Energy Surveys & Projects	\$0

The only funds specifically designated for energy projects are from the energy surveys and projects fund. The M&I operations fund is for repair parts, repairs, maintenance, small contract jobs, and other daily maintenance operations. The M&I projects fund is for any other projects requested. Due to the depreciating infrastructure in buildings, equipment, utilities, paving, and fences, the projects fund cannot meet all requirements.

E. ENERGY AND WATER SURVEYS AND AUDITS

Both NECPA and EO 12902 require Federal agencies to perform energy and water surveys and audits. EO 12902 details the requirement by specifying prioritization surveys and comprehensive

facility audits and by mandating all facilities to be audited within ten years.

I. Prioritization Surveys

ABERDEEN - Energy Audits have been completed for all Area hospitals and health centers. Water conservation audits were not completed.

ALBUQUERQUE - Prioritization Surveys were not necessary, since 4 out of the 5 area hospitals were audited last year. The fifth hospital (Albuquerque Service Unit) is under major renovation and being converted to a very energy-efficient HVAC system, so no audit is planned at ASU.

BILLINGS - No energy and water surveys or audits were conducted at the Service Units this year.

PHOENIX - In 1998 Energy audit was performed on all the Hospitals, Health centers, school clinic. The following buildings are scheduled in May for another comprehensive energy audits using FY1998

Fundings:

- Phoenix Indian Medical Center - Hospital and Administrative Building
- Whiteriver - Hospital
- San Carlos - Hospital
- Owyhee - Hospital

PORTLAND - A preliminary energy audit questionnaire was performed at each Area Service Unit in FY 1995. All IHS owned facilities were included in the survey. The survey collected the overall facility information and major energy using systems/equipment information. This information was assessed to produce a prioritization schedule.

TUCSON - PRIORITIZATION SURVEY: The initial energy management surveys were conducted in 1986 and 1993, and a portion of each Deep Look survey involved energy management. In addition, an energy study was conducted for the Sells Hospital in 1991. The 1982 survey of San Xavier and Santa Rosa states that the two facilities were operated in an energy efficient manner and that AEnergy saving retrofit projects are not cost effective when applied to energy efficient facilities. @ The report does state that some mechanical renovations and automatic controls would save energy. Further, the report stated the use of the incinerator and exercise of the generator at Santa Rosa caused 20% of the total energy use; both have been discontinued.

The 1982 survey of Sells says that the compound exceeds the Department of Energy goals by 13.5%. It also said that architectural renovations would not produce sufficient savings to justify the expenditure. The report recommends some mechanical renovations to save energy, and also the installation of gas meters to identify major users of LPG. Since that time, the quarters have been removed from the central LPG system and each quarters building is individually metered. The LPG system servicing the hospital has been replaced.

The findings of the 1991 Sells study recommended replacement of some equipment, reviewing equipment sizing to optimize efficiency, reviewing design parameters on outside air quantities to reduce HVAC energy requirements, and making some operational changes to reduce energy use.

The initial surveys have been conducted. Two major mechanical renovation projects at Sells and San Xavier have incorporated many of the recommendations, and another major renovation project at Sells began in FY99. This project will implement other conservation measures. Following the completion of the project, another survey may be needed to re-assess the energy conservation status.

II. Comprehensive Facility Audit

ABERDEEN - Of the Areas 28 facilities, comprehensive energy audits were completed at 12 of the facilities. The total area surveyed to date 54% of the gross floor area. The remaining 46% will be

surveyed in future fiscal.

ALBUQUERQUE - In the Albuquerque Area, energy audits were completed on all the hospitals, except the Albuquerque facility which is undergoing extensive renovation. Energy Audit Reports were completed in 1997 for Acoma-Canoncito-Laguna, Zuni, Mescalero, and Santa Fe Indian Hospitals. Comprehensive Facility Audits were completed for 4 out of the 5 major facilities in the Albuquerque Area. Following is a summary of the recommendations from these audits:

INSTALLATION NAME	DATE OF AUDIT	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY
Acoma-Canoncito-Laguna Hospital	Jan. 1997	Retrofit fluorescent and incandescent lighting; install an Energy Management System for Central Plant and for AHUs; connect steam sterilizers to existing boiler; replace existing chillers with high-efficiency screw chillers; replace solar, domestic hot water, and condenser water shell and tube heat exchangers with flat plate; convert AHU to VAV; install premium efficiency motors; reduce water flow.
Mescalero Hospital	March 1997	Retrofit lighting; install energy management system; replace existing boilers; replace shell and tube heat exchangers with flat plate heat exchangers; convert AHUs to VAV; install premium efficiency motors; reduce water flow.
Santa Fe Indian Hospital	Jan. 1997	Retrofit lighting; install energy management system; remove steam sterilizer and install new high-efficiency boiler; replace heat pump chiller with screw chiller; replace shell and tube heat exchangers with flat plate; convert AHUs to VAV; install premium efficiency motors; install new cooling tower fan VSD; install 2-way control valves; reduce water flow.
Zuni Hospital	Feb. 1997	Retrofit lighting; install energy management system for central plant and AHUs; remove steam sterilizers/connect to new small boiler; replace 2 existing boilers with 3 new boilers; replace shell and tube heat exchangers with flat plate heat exchangers; install control valves on AHUs steam coils; convert AHUs to VAV; install high-efficiency motors; reduce water flow.

The Area will implement energy conservation measures as funding becomes available. A summary of the Albuquerque Area comprehensive facility audit is provided in the following tables.

1.	Number of Locations:	5
2.	Energy Audits within last 3 years:	4
3.	% of all facilities with Energy Audits:	80%
4.	Number of New Facilities* designed to Energy Standards (within the last 3 years):	1
5.	Total Percentage of Facilities with recent audits and/or new facilities designed to standards:	100%

*ASU's mechanical and electrical systems are being completely renovated, so it's included as a "New Facility" in this report.

BEMIDJI - Sixty-seven percent of space received comprehensive facility audits. The remaining audit will be completed by FY 2000.

PORTLAND - Comprehensive energy audits will be performed at a minimum of ten percent of the Portland Area IHS facilities annually. Audits have been prioritized as follows:

ENERGY AUDIT CHRONOLOGY			
Scheduled Year of Audit	Service Unit	Year of Previous Audit	Number of Years Between Audits
1996	Colville – Completed	1986	10
	Neah Bay – Completed	N/A	N/A
1997	Warm Springs – Completed	1992 (new bldg) 1986 (old)	5 9
	Northern Idaho – Completed	1986	9
1999	Wellpinit - Pending	1986	12
	Taholah – On Hold	1992	6
	Fort Hall	1994	5
	Northwest Washington	1992	7
	Western Oregon	1992	8
	Yakama	1994	6
	Puyallup	1992	9
	YTC, Spokane	1995	6

The Portland Area has completed all energy audits in accordance with Executive Order #12902, with the exception of two sites per the table shown above.

Wellpinit: The energy audit scheduled for FY 1999 at Wellpinit was canceled. The Wellpinit Service Unit is funded for a major clinic expansion and upgrading of the existing HVAC system components in FY 2000.

Taholah: In FY 1999 a contract to perform an energy audit contract was issued to an A&E firm. The mechanical engineering firm reported the HVAC systems at the facility are too complex to model. The energy audit is on hold pending resolution and/or recommendations by the A&E and the construction of a replacement facility in FY2001.

Plans for implementing justifiable Energy Conservation Measures identified in comprehensive energy audits is typically prepared within 180 days (resources permitting) of receipt of energy audit reports.

Program Assessment Mechanism. The following have been identified as performance indicators for the Area energy management program:

- Goals for energy consumption have been established.
- The majority of the Portland Area Service Units are achieving the established energy consumption goals.
- Preliminary energy audits were performed at all IHS facilities.
- Prioritization of audits was established based on data from the preliminary energy audits.
- All required energy consumption reports have been submitted to Headquarters.
- All required energy consumption reports have been submitted on time.

The preliminary energy audits were completed by questionnaire and were based on the questions in Appendix A of the *Architect's and Engineer's Guide to Energy Conservation in Existing Buildings, Volume 1 - Energy Use Assessment and Simulation Methods, April 1990*. Preliminary energy audits were completed at all locations in the Portland Area by September 1995. The preliminary audits have been used to determine which locations will receive comprehensive energy audits through fiscal year 2001. Comprehensive facility audit information for , for previous years are provided in the following tables.

SUMMARY OF ENERGY AUDITS IN THE PORTLAND AREA

Number of Locations:	12
Energy Audits within last 3 years:	75%
Percentage of all facilities with Energy Audits:	100%
Number of New Facilities designed to Energy Standards (within the last 3 years):	0
Total Percentage of Facilities with recent audits (last 5 years) and/or new facilities designed to standards:	75%

**Table for Portland IHS-Owned Facilities
Comprehensive Facility Audit for IHS Owned Facilities**

INSTALL Name and Number	Energy Audit Performe d	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST (\$)	Payback (years)
Colville Service Unit 11551	Yes PO6CL00 8C6	1997	Audit accomplished in-house at Engineering Services. Final report submitted. COMPLETED.	N/A	N/A
			Recommendation to install floor insulation. PENDING.	\$4,500	<2

INSTALL Name and Number	Energy Audit Performe d	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST (\$)	Payback (years)
			Recommendation to adjust HVAC. Air balance report is pending previous project PO0CL455C6. PENDING.	\$200	<1
Fort Hall Service Unit 11491		1990	New facility designed to contemporaneous energy standards. COMPLETED	N/A	N/A
	Yes L.A. Olson	1994	Analysis of Energy Usage (to confirm 1990 design). COMPLETED.	N/A	N/A
Neah Bay Service Unit 30067	Yes PO6NB00 8C6	1996	Recommendation to reset thermostat settings during unoccupied periods. COMPLETED FY 1997	\$10	0.03
			Recommendation to replace existing window seals. Note: All windows replaced in FY 1997. COMPLETED FY 1997	\$500	4
			Recommendation to replace interior light fixtures with new lamps and ballasts. - Implementation plan in place at the Service Unit. PENDING.	\$7,673	6
			Recommendation to install timer for domestic hot water circulation pump. Implementation nearly complete. COMPLETED	\$300	9
No. Idaho Service Unit 20944	Yes	1997	DOE/FEMP no cost audit. COMPLETED FY 1997.	N/A	N/A
			Recommendation to retrofit lamps and ballasts for main level of clinic. Action PENDING.	\$2,905	4.8

INSTALL Name and Number	Energy Audit Performed	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST (\$)	Payback (years)
			Recommendation to remove fixtures in basement office. Action FUNDED.	\$150	3.3
			Recommendation to install domestic hot water recirculating pump timer. Action FUNDED.	\$150	1.3
NW Wash. Service Unit 37567	Yes Kerner/Fisher	1992	Comprehensive Audit. COMPLETED.	N/A	N/A
	No PD9NW00 2C6	10/94	Install energy management time clock. COMPLETED	\$2,049	0.2 Years
			Install floor insulation. COMPLETED	\$21,789	4.5 Years
			Install occupancy sensors. COMPLETED	\$89	3.7 Years
			Construct main entrance vestibule. COMPLETED	\$9,785	12.8 Years
	No PO7NW00 2C6	1997	HVAC System Upgrade COMPLETED	\$400,000	
Puyallup Service Unit 35776	No	1992	New facility designed to contemporaneous energy standards. COMPLETED.	N/A	N/A
Taholah Service Unit 20611	Yes Kerner/Fisher	1992	Comprehensive Audit. COMPLETED.	N/A	N/A
	Yes PO8TA00 8C6	1998	Comprehensive Audit HOLD		
	PD2TA004 C6	1992	Install energy management system. COMPLETED	\$2,049	0.5 Years
		1992	Install floor insulation. COMPLETED	\$8,604	1.6 Years

INSTALL Name and Number	Energy Audit Performed	FY	DESCRIPTION OF ENERGY CONSERVATION OPPORTUNITY	INITIAL COST (\$)	Payback (years)
		1992	Install new ventilation system. COMPLETED	\$15,843	12.5 Years
Warm Springs Service Unit 11542	Yes Anderson	1986	Audit (Old Health Center). COMPLETED	N/A	N/A
	PO7WA002C6	1997	Audit of Quarters. (Cost included in cost of Tribal Health and Wellness Center)	N/A	N/A
Wellpinit Service Unit 11553	Yes Anderson	1986	Audit. COMPLETED.	N/A	N/A
	Yes PO8WE003C6	1998	Comprehensive Audit HOLD		
W. Oregon Service Unit 11540	Yes Kerner/Fisher	1992	Install automatic control system for HVAC in FY 1997 in project PO6WN008C6. COMPLETED	N/A	N/A
Yakama Service Unit 19712	Yes Anderson	1987	Energy analysis of new construction. COMPLETED	N/A	N/A
	Yes L.A. Olson	1994	Analysis of energy usage in the old facility. COMPLETED	N/A	N/A
Youth Treatment Center / ITC 41217	Yes	1995	New facility designed to current energy standards. COMPLETED.	N/A	N/A

LEASED FACILITIES - PL 94-437 & PL 103-513

Warm Springs Service Unit 11542	No	1992	New facility designed to contemporaneous energy standards. COMPLETED.	N/A	N/A
	PO7WA002C6	1997	Energy Audit Performed on Health & Wellness Center. COMPLETED.	\$18,000	N/A

TUCSON - These audits have yet to be completed. The guidelines and scope for conducting these

audits have not yet been written. The audits will be conducted by Architect/Engineer contractors. The transfer of functions from Engineering Services to the Area may delay completion.

III. Leased Facilities

ABERDEEN - The health center at Ft. Totten, ND, is a leased facility where the Tribe pays all utilities. This health center is located in a tribal building where utilities can not be metered separately.

ALBUQUERQUE - The Albuquerque Area has nearly 540,000 ft² of space, 3% of which is leased space. Leased facilities are typically small Health Clinics and Health Stations at the various pueblos. They are typically part of existing buildings, which are used for a variety of functions besides health care. When any of these facilities are replaced, more energy-efficient designs are incorporated into the new facilities. Some of the Area's facilities are being converted to 638 and new facilities are constructed, such as the Pinehill-Ramah and Alamo Health Centers.

TUCSON - About 1% of the square footage utilized by IHS personnel in the Tucson Area is leased. Since all utilities are paid by the leasor, no audits or projects are planned for those facilities.

F. IMPLEMENTATION OF ENERGY EFFICIENCY AND WATER

ABERDEEN - The Aberdeen Area has completed energy audits at 12 of 28 locations prior to fiscal year 1998. These audits have been used to provide data for the Area-wide energy savings performance contract which is expected to be awarded in fiscal year 2000. Energy conservation projects will be completed at the nine locations included in the ESPC.

ALBUQUERQUE - No new projects were implemented. However, as funds become available, the remaining phases of the Albuquerque Hospital renovation make it possible to serve the entire hospital with the ground-source thermal water closed loop system. This project is expected to be completed in Fiscal Year 2001, assuming the necessary funds are made available.

BILLINGS - Since there were no energy audits conducted, no "official" deficiencies were eliminated. However, energy conservation projects were conducted as follows:

SERVICE UNIT	PROJECT	COST
Crow	Replace Windows in Quarters	\$15,000
Northern Cheyenne	Replace Windows in Quarters	\$16,780
	TOTALS:	\$31,780

OKLAHOMA - Projects completed in FY99 are as follows :

Automatic sliding vestibule doors were installed at the north entrance to the Claremore Indian Hospital and this has reduced the inrush of outside air into the waiting area. 3 thermostats were replaced with the programmable type at the Claremore Indian Hospital

The north wall of the Lawton Indian Hospital was originally constructed in 1967 with sheetrock attached to masonry and no insulation. Insulation was added recently when the sheetrock was removed to solve a problem with condensation forming on the inside of an exam room.

90 % of the incandescent lamps at the W.W. Hastings Indian Hospital in Tahlequah have been replaced with compact fluorescent lamps.

PORTLAND - The Portland Area supports conservation of energy in federal and tribally owned facilities operated directly by IHS or under P.L. 93-638. The following is a list of energy conservation projects implemented during FY 1999:

FEDERAL FACILITIES

Colville - The Service Unit has experienced significant energy savings as a result of efficient operation and new boilers that were installed in FY 1997 and air balancing which occurred in FY 1999.

Neah Bay - PO6NB008C6 - New heat pumps were installed in late FY 1998. PO7WB010C9 - A contract for a new dental modular clinic was entered into in FY 1999. The facility is designed to use new energy efficient products and construction methods.

Fort Hall - The facilities staff are improving the lighting systems to more efficient electronic ballasts and energy efficient bulbs.

Yakama - A new energy efficient 18-ton chiller was installed at the clinic annex August, 1999. A "hands-on" HVAC 3-day training seminar was conducted at the facility in joint effort with Washington State University (WSU). The seminar discussed topics which will familiarized facility maintenance staff with energy efficient HVAC, operations, maintenance, and system testing/inspection.

Indian Tribal Consortium - A "hands-on" HVAC 3-day training seminar was conducted at the facility in joint effort with WSU. The seminar discussed topics which will familiarized facility maintenance staff with energy efficient HVAC, operations, maintenance, and system testing/inspection.

Northwest Washington (Lummi) - PO7NW002C6 - This project was funded FY 1997 for design and construction to upgrade the clinic's HVAC. Major improvements included; new heat pumps, direct digital control, and improved ductwork were provided. The project was completed in FY 1999.

Warm Springs - PO7WA002C6- Warm Springs, Oregon. Energy audit report for the Quarters Units is completed.

Western Oregon - PO8WN001C6, Salem, Oregon provides for an energy efficient lighting upgrade to the clinic, maintenance storage buildings, and dental trailer. Portland General Electric has estimated the Service Unit to be eligible for a \$6,000 energy conservation rebate from the utility as a result of this project. Annual savings are estimated in excess of 100,000 KWH or approximately \$5,000.

Wellpinit - A major clinic expansion at Wellpinit, WA, is currently in the design stage. The new facility addition will use new practices and products for energy efficiency and water conservation

Healing Lodge of the Seven Nation - - A "hands-on" HVAC 3-day training seminar was conducted at the facility in joint effort with WSU. The seminar discussed topics which will familiarized facility maintenance staff with energy efficient HVAC operations and maintenance and trouble shooting procedures.

TRIBALLY OWNED FACILITIES

Puyallup Tribe - The Tribe hosted an IHS funded "hands-on" HVAC 3-day training seminar at the health center in joint effort with WSU. The seminar discussed topics which will familiarized facility maintenance staff with energy efficient HVAC operations and maintenance and trouble shooting procedures.

G. SOLAR AND OTHER RENEWABLE ENERGY

ALBUQUERQUE - Both the Santa Fe and the A-C-L Hospitals have solar technology. In FY' 99, The A-C-L system was improved with the installation of a solar overtemperature protection system to prevent a dangerous potential over-heating situation. This project was designed under contract by an outside engineering firm, and an 8(a) contractor constructed the improvements. M&I funds were used to fund this project, which cost approximately \$150,000, including design fees.

As previously mentioned, the solar energy collection system at Santa Fe is not operating correctly. The exact cause of the problem and its severity are unknown as of this submission. Research will be conducted, then the appropriate action(s) will be taken.

BILLINGS - The use of solar energy in this geographical region is not viable. An experimental generator is being proposed by the local utility company in Fort Washakie, Wyoming. There are no other alternative energy projects planned at this time.

OKLAHOMA - We requested that a Department of Energy "Super ESPC" contractor investigate renewable energy technologies at an IHS hospital in northeast Oklahoma. Preliminary analysis indicated that revamping active solar panels that heat domestic water at the W.W. Hastings Indian Hospital in Tahlequah would have an excessive payback.

TUCSON - No plan has been developed to significantly increase the use of solar power or other renewable energy sources. No renewable energy projects were implemented in FY99 and none were proposed for future projects. Preliminary contacts have been made with a local University, the Department of Energy, and the Solar Energy Research Laboratory to find funding for this type of project. To date, no funding has been obtained.

H. MINIMIZATION OF PETROLEUM-BASED FUEL USE

BEMIDJI - One project is proposed to convert four buildings from heating fuel oil and propand to natural gas. The project is in the planning phase at this time.

OKLAHOMA - We saved \$3,434 for the Claremore Indian Hospital by procuring natural gas on the spot market from July 1998 through July 1999. An unusually mild winter coupled with bidding on a fixed natural gas price for one third of the winter months caused our savings to be less than anticipated. The existing contract that Tiger Natural Gas has with the Department of Veteran's Affairs Utilities Management Program has been assumed by the General Services Administration.

TUCSON - The major fuels at San Xavier are natural gas and electricity; the electricity is provided from coal-fired power plants. The major fuels used at Sells are LPG and electricity. The major power sources at Santa Rosa and Pisinemo are electricity.

I. ENERGY EFFICIENT OPERATIONS AND MAINTENANCE PROCEDURES

ABERDEEN - The Area has installed a number of energy management systems at Area facilities to help reduce energy consumption. Since 1995, the Area has been very active in promoting low cost and no cost energy saving opportunities to the Facility Managers. These opportunities have resulted in an estimated eight to ten percent reduction in energy consumption. The Area does not have energy data available to measure the reduction in energy consumption from these efforts.

ALBUQUERQUE - All existing pneumatic controls at the hospitals are eventually to be replaced with

new direct digital control (DDC) systems, which are user-programmable, computer-based energy management systems. These will provide chiller and boiler optimization, variable speed drive controls, optimal equipment start/stop and precise temperature controls. A DDC system installed as part of the ASU renovation.

Other procedures include replacement of failed equipment with energy efficient models, and in-house projects such as replacing light fixtures with more energy efficient fixtures.

BEMIDJI - Procedures include time-day-scheduling of HVAC equipment, lighting and equipment, using energy efficient equipment for failed and scheduled replacement, installation of digital controls on HVAC.

BILLINGS - Operation and Maintenance (O&M) procedures include Preventive Maintenance (PM) techniques to keep the building operating systems at their highest efficiency levels. Examples involve boiler systems, air handlers, and light fixtures. Other facility areas are constantly monitored during daily inspections, such as weather stripping, window air seepage, unsealed wall penetrations, and overhead door areas.

OKLAHOMA – A water softener was installed at the Lawton Indian Hospital and this will help prevent excessive scaling of boiler tubes. Leaking chilled water and hot water valves have been replaced at W.W. Hastings Indian Hospital in Tahlequah. Steam pressure has been reduced from 80 psig to 40 psig and start/stop/occupied/unoccupied parameters have been optimized via the DDC system at the Claremore Indian Hospital.

PORTLAND - The Portland Area energy conservation program consists of management emphasis and field support of actions to achieve goals of the Energy Policy Act of 1992 and the Executive Order 12902. The Portland Area Indian Health Service Energy Guideline, dated October 5, 1992, implements operations and maintenance procedures for increased energy efficiency within the service units. Examples of energy consumption reduction methodology are:

- ☐ Energy Consumption Data Collection, Analysis, and Reporting
- ☐ Energy Audits
- ☐ Technical Assistance for Implementing Energy Conservation Measures

TUCSON - Thermostats and controls are replaced with automatic time-setback models to conserve energy where feasible; the use of occupant sensors has been implemented in some rooms. Water-saving valves and toilets are replacing less efficient ones as the older ones wear out. When equipment is replaced, more efficient units are specified. The use of outdoor air is used when feasible. As lighting is replaced, more efficient lamps and ballasts are used. Maintenance staff are trained in maintenance procedures which enhance energy efficiency.

J. ENERGY EFFICIENCY IN NEW SPACE

The Code of Federal Regulations (CFR)436 and CFR 435 (or state codes, whichever are more stringent), are used to ensure that designs of new buildings incorporate life-cycle cost methodologies. This applies to renovation of existing spaces.

ABERDEEN - The most recent new space completed in the Aberdeen Area is the youth regional treatment center at Wakpala, SD. Energy consumption at this facility was 72,022 BTU/gsf in FY'98 compared with 120,745 BTU/gsf Area-wide in FY'98. The Area will continue to consider energy consumption in the design of new space.

ALBUQUERQUE The "Architect/Engineer (A/E) Guide" is a guideline used by IHS in the design of all

new construction and renovation projects at all of its facilities. The A/E Guide defines the minimum requirements for each submission in all stages of the design process. The A/E Guide specifically states that the design shall conform to the latest edition of Executive Order 12902, and DOE Conservation Standards (10CFR Part 435). The Guide further states:

The design shall meet the requirements of Executive Order 12902 – “Energy Efficiency and Water Conservation at Federal Facilities.” The design is to minimize the life cycle cost by utilizing energy efficiency, water conservation, or other renewable energy technologies. The design shall meet or exceed the energy performance standards applicable as set for in 10 CFR 435 or by local building standards.

BEMIDJI - Design of new and remodeled space incorporates energy efficient construction, materials, and equipment as a general requirement, although a policy is not in place.

BILLINGS - Energy efficient systems are designed into all of the projects overseen or developed by the Facilities Management Branch. Energy efficient building components and maintenance free devices are constantly reviewed and incorporated into new project designs.

New facilities constructed, or being constructed, in the Billings Area include Heart Butte Clinic, Pryor Clinic, Fort Belknap Health Center, and Northern Cheyenne Health Center. All are being constructed with energy efficient systems, insulated building envelopes, and HVAC control systems.

OKLAHOMA – A new building at the Clinton Indian Hospital, that is replacing dilapidated trailers under the Repair by Replacement program, will have energy efficient features.

PHOENIX - The HOPI Health Care Center is a new 9,500(102,257 sqft) square meter facility designed to provide ambulatory health care limited inpatient care, and office space necessary for medical services. The building is designed or projected for a annual energy usage of 14,107 Btu at a cost of \$262,620/year. This calculates to 137,957 Btu/SF and \$2.57 \$/SF.

PORTLAND - A major clinic expansion at Wellpinit, WA , is currently in the design stage. The new facility will use new practices and products for energy efficiency and water conservation.

A contract for a new dental modular in Neah Bay clinic was enter into in FY 1999. The facility is designed to use new energy efficient products and construction methods.

New health facility projects at Kamiah, ID, Tulalip, WA, and Quinault, WA will also include energy efficient designs.

K. PERFORMANCE EVALUATIONS

ALBUQUERQUE - Position descriptions and performance evaluations of facility managers, designers, energy managers, their superiors, and others critical to the implementation of EO 12902 do not specifically address energy efficiency, water conservation, and solar and other renewable energy projects. However, such actions are included in performance evaluations since they are normal to the positions.

L. INCENTIVE AWARDS

Except for awards and recognition from immediate supervisors, there are no incentive programs to reward exceptional performance in implementing the provisions of NECPA and EO 12902.

M. PROCUREMENT OF ENERGY EFFICIENT PRODUCTS

ABERDEEN - The Aberdeen Area is aware of the requirement to procure energy efficient products. The Area does not have specific information available on product purchases made in 1998 because these products were purchased as part of larger construction projects. The Area will plan on providing information on product purchases in FY 2000.

ALBUQUERQUE - Procurement of energy efficient products is a normal part of business. All personnel recommending and specifying products for procurement consider energy efficiency and cost savings in product selection.

BEMIDJI - One service unit has a written policy to determine if products are energy efficient, compatible, cost effective, conforming to performance requirements. Purchase of energy efficient products is a "normal business" activity.

BILLINGS - With the use of *SweetSource*, a product information catalog, new energy efficient products are reviewed by the Facilities Management Branch engineers. These computerized CD catalogs are updated and provided on a quarterly basis by the contracted vendor. Incorporation of selected products are provided in project design specifications.

OKLAHOMA - Two new air handlers with DDC have been installed at the Claremore Indian Hospital. Our Area acquisition personnel are aware of the requirements for purchasing energy efficient products as described in the DOE handbook.

PORTLAND - The October 5, 1992, Portland Area Indian Health Service Guideline, establishes model operations and maintenance purchasing procedures for increased energy efficiency within the service units.

The Portland Area via Engineering Services was able to procure the Department of Energy (DOE) for a *Afree@* energy audit at Northern Idaho. The DOE provides cost-free energy audits in exchange for the implementation of ten (10) year or less ECM payback.

TUCSON - The specifications written to replace equipment and products require all new items meet appropriate energy efficiency standards. This includes air conditioners, water heaters, lighting, and furnaces. As lamps and ballasts are replaced, energy efficient lamps (such as T-8 lamps) and electronic or magnetic ballasts are utilized. As toilets, faucets, and shower heads are replaced, the low-flow and water conserving type are used. As roofs are replaced, those with higher insulating values are used. The replacement of 15- and 20-year old furnaces and air conditioners with more efficient ones continue, using units with some of the most efficient available; continually burning pilot lights are replaced with electronic pilots.

N. ENERGY MANAGEMENT TRAINING

ALBUQUERQUE - The Albuquerque Area conducts an annual workshop for its facility managers. At future workshops, seminars will be held on a variety of energy management and conservation topics. Additionally, each Service Unit is encouraged to identify their own training needs and attend the appropriate courses offered through commercial vendors.

BILLINGS - The biggest energy drain in Montana and Wyoming is the heating requirement. Facility Managers are trained on the Direct Digital Controls (DDC's) of their specific HVAC system to properly maintain and operate them in an efficient manner. Other energy management courses are offered when available within the area.

PORTLAND - The Area Energy Manager received training in Facilities Orientation I, containing a section on Energy Management.

TUCSON - The Tucson Area has two trained energy managers. Both have attended the IHS Energy Management training conducted by Adam Scully. Two new facilities engineers will attend energy management training when possible.

O. ENVIRONMENTAL BENEFITS OF ENERGY MANAGEMENT ACTIVITIES

ALBUQUERQUE - Reduced energy usage will result in less demand for fossil fuels and will ensure a cleaner environment.

PORTLAND - The Portland Area Office has instituted a chlorofluorocarbon (CFC) reduction program for heating ventilation and air-conditioning (HVAC) systems at several sites.

FY 1996 and 1997 HVAC upgrades at Neah Bay Clinic (HCTR), Northern Idaho's Lapwai Building #0001 (main HCTR building), Wellpinit's Building #0005 (main HCTR bldg) and the Western Oregon Service Unit eliminated CFC gases in air conditioning operations at these facilities.